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DRAFT

Issue Paper

on

Service Center Role in Support of
BLM Minerals Programs

Prepared for

Assistant Service Center Director
Technical and Scientific Systems

by

DSC Minerals Study Group

June, 1984

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Executive Summary

Purpose and Scope

- Minerals Study Group was formed to evaluate the role of the SC in minerals program.
- The Group focused on analysis of SC minerals funding, minerals expertise, field office assistance needs, mineral data base needs, and potential application of advanced data technology in the minerals program.
- Mineral-related activities at SC consist of several independent, moderate to high priority assistance projects at a total net funding level of \$1.5 M.
- Minerals expertise at the SC is lacking in several skill areas.
- Automated minerals data bases should be improved to facilitate field office use.
- Several minerals evaluation functions could be centralized at a single location.
- SC does not currently provide "special skills" assistance to the field for GEM resources.

Summary and Goals

- Minerals Study Group was formed to evaluate the role of the EC in mineral development.
- The Group focused on analysis of EC mineral funding, mineral expertise, field office assistance needs, mineral data base needs, and potential application of advanced data technology in the mineral program.
- Mineral-related activities at EC consist of several independent, water-use to high priority assistance projects at a total cost funding level of \$1.5 M.
- Minerals expertise at the EC is lacking in several critical areas.
- Mineral data base needs should be reported to facilitate field office use.
- Mineral assistance evaluation functions could be centralized at a single location.
- EC does not currently provide "specific" assistance to the field for mineral resources.

- Several mineral-related activities are in need of review for potential GIS application.

- Bureau should improve its capability to digitize geologic maps.

- Remote sensing clearly has a role in the minerals program. Geologic expertise to apply remote sensing techniques to GEM resource functions is lacking.

The Minerals Study Group was composed of the following SC people:

Lola Cocker	Energy and Minerals Team
M. F. De St. Jeor	Ontario ADP Support Team
Don Fisher	Branch of Graphics Systems Development
Jean Joffand	40-870 - Mineral Resources and Mining Law
Gary Maraska	Energy and Minerals Team
Paul Myers	Division of Resource Systems
Bruce Van Noveren*	Branch of Physical Resources
Carol Wilson	Branch of Technical Application Assistance

*Chairperson

- Several mineral-related activities are in need of review for potential
GIS applications.

- Bureau should improve its capability to digitize geologic maps.

- Remote sensing clearly has a role in the minerals program. Geologists
experts to apply remote sensing techniques to U.S. resource locations is
lacking.

BACKGROUND

Service Center (SC) responsibilities in support of the Bureau's minerals programs are not clearly defined. WO minerals managers and staffs and field office minerals personnel have little understanding of SC roles, technical capabilities or potential contributions in the minerals activity. This situation prompted the Assistant Service Center Director for Technical and Scientific Systems (D-400) to initiate a study group to define a D-400 role in minerals. Staff specialists from the Divisions of Advanced Data Technology and Resource Systems were requested to serve on the study group. Since D-200 (Data Systems) was currently involved with automated mineral-related systems, the ASCD for Data Systems contributed two of his people to the effort.

The Minerals Study Group was composed of the following SC people:

Lois Cocker	Energy and Minerals Team
W. F. De St.Jeor	Onshore ADP Support Team
Don Fisher	Branch of Graphics Systems Development
Jean Juilland	WO-670 - Mineral Resources and Mining Law
Gary Maruska	Energy and Minerals Team
Paul Myers	Division of Resource Systems
Bruce Van Haveren*	Branch of Physical Resources
Carol Wilson	Branch of Technical Application Assistance

*Chairperson

BACKGROUND

Service Center (SC) responsibilities in support of the Bureau's Minerals programs are not clearly defined. No Minerals program and staffs and field office Minerals personnel have little understanding of SC roles, technical capabilities or potential contributions to the Minerals activity. This situation prompted the Assistant Service Center Director for Technical and Scientific Systems (D-400) to initiate a study group to define a D-400 role in Minerals. Staff specialists from the Division of Advanced Data Technology and Resource Systems were requested to serve on the study group. Since D-400 (Data Systems) was currently involved with automated mineral-related systems, the ASST for Data Systems contributed two of his people to the effort.

The Minerals Study Group was composed of the following SC people:

John C. Carter	Energy and Minerals Team
W. F. De Stigter	Resource Support Team
Don Fisher	Branch of Graphic Systems Development
Dean Williams	40-510 - Mineral Resources and Mining Law
Gary Morris	Energy and Minerals Team
Paul Myers	Division of Resource Systems
Steve Van Diermen	Branch of System Resources
Carol Wilson	Branch of Technical Application Assistance

PURPOSE AND OBJECTIVES

The purpose of the Minerals Study Group, as stated in an April 17, 1984 memorandum from the ASCD, Technical and Scientific Systems, was to prepare an issue paper on the Service Center role in support of BLM Minerals programs. The Study Group established the following objectives:

- I. Determine the nature and funding levels of current SC activities which are supported by 4100.
- II. Determine the current level of mineral expertise at the SC.
- III. Investigate potential field office mineral support requirements which the SC could provide and which would be impractical or inefficient for field offices to provide themselves.
- IV. Investigate field office minerals-related functions which now employ any type of computer assistance.
- V. Determine and discuss additional field office minerals functions which could be significantly improved through the use of computer technologies.

Task groups were formed to work on each of the objectives/tasks. The results of these efforts follow.

PURPOSE AND OBJECTIVES

The purpose of the Minerals Study Group, as stated in an April 17, 1964 memorandum from the ARPA, Technical and Scientific Systems, was to prepare an issue paper on the Service Center role in support of GIN Minerals Program. The Study Group established the following objectives:

- I. Determine the needs and funding levels of current SC activities which are supported by ARPA.
- II. Determine the current level of mineral activities at the SC.
- III. Investigate potential field office mineral support requirements which the SC could provide and which would be hampered or inefficient for field offices to provide themselves.
- IV. Investigate field office mineral-related functions which now require any type of computer assistance.
- V. Determine and discuss additional field office mineral functions which could be significantly improved through the use of computer technologies.

Task groups were formed to work on each of the objectives/tasks. The results of these efforts follow.

I. Current Minerals Funding at the Service Center

Funding summarized by subactivity:

<u>Program</u>	<u>Funding</u>	<u>Percent of Total</u>
Oil and Gas (4111)	\$ 200,000	6.7
Coal (4112)	2,088,000*	69.6
Geothermal (4113)	48,000	1.6
Oil Shale (4114)	488,000	16.3
Mining Law (4133)	161,000	5.4
Mineral Leasing (4133)	13,000	0.4
TOTAL	\$2,998,000	100.0

*\$1,500,000 transferred to USGS for coal hydrology studies in MT, WY, CO, UT, NM and Eastern States.

4100 funding summarized by SC Division:

<u>Office</u>	<u>Funding</u>	<u>Percent of Total</u>
Office of the SCD (D-100)	\$ 51,400	1.7
Division of Technology Transfer (D-140)	17,950	0.6
Division of Computer Applications (D-220)	92,350	3.1
Division of Record Systems (D-240)	118,150	3.9

1. Current Month's Funding at the Service Center

Funding requested by subactivity:

Activity	Funding	Percent of Total
Det and Sns (4017)	\$ 250,000	8.7
Cost (4018)	2,000,000	68.6
Equipment (4019)	40,000	1.6
Off Space (4020)	400,000	13.3
Printing (4021)	100,000	3.4
Telephone (4022)	75,000	2.5
TOTAL	\$2,965,000	100.0

\$2,400,000 transferred to 6822 for cost hydrology studies to MI, NY, CO, UT, NM and Eastern States.

\$100 funding authorized by MI Division:

Office	Funding	Percent of Total
Office of the Sec (10-100)	\$ 50,000	5.0
Division of Technology Transfer (10-140)	75,000	7.5
Division of Computer Applications (10-250)	25,000	2.5
Division of Record Systems (10-260)	50,000	5.0

11. Mineral Expertise at the Service Center

<u>Office</u>	<u>Funding</u>	<u>Percent of Total</u>
Office of the ASCD, T & S Systems (D-400)	19,200	0.6
Division of Survey and Mapping (D-410)	211,700	7.1
Division of Advanced Data Technology (D-440)	182,200	6.1
Division of Resource Systems (D-470)	1,837,400*	61.3
Division of EIS Services (D-490)	<u>467,600</u>	<u>15.6</u>
TOTAL	\$2,998,000	100.0

* \$1,500,000 transferred to USGS for coal hydrology studies benefitting the coal states of Montana, Colorado, Wyoming, Utah, New Mexico, and Eastern States.

Subtracting the \$1.5 M pass-through funds leaves the SC with a total minerals budget of approximately \$1.5 M. This is spread over a number of offices and subactivities, with no significant trends evident. The Service Center performs a variety of minerals-related services, all of which are moderate to high priority, but involve minor funding levels.

Office	Swedish	Percent of Total
Office of the ASB, T & S System (0-400)	17,500	0.6
Division of Survey and Mapping (0-410)	271,700	1.1
Division of Advanced Data Technology (0-440)	182,700	0.1
Division of Research Systems (0-470)	7,437,400	0.3
Division of IT Services (0-480)	467,600	1.8
TOTAL	\$2,920,000	100.0

* \$2,920,000 transferred to USSS for cost category studies pertaining the cost studies of Montana, Colorado, Kentucky, Utah, New Mexico, and Eastern Arizona.

Subtracting the \$1.5 million through funds leaves the \$1.4 million budget of approximately \$1.5 M. This is spread over a number of offices and subdivisions, with no significant trends evident. The Service Center performs a variety of minor-related projects, all of which are handled at high priority, but involve minor funding levels.

II. Mineral Expertise at the Service Center

A search of the SC personnel roster turned up the following minerals positions permanently assigned to the SC:

Don Fisher	Mining Engineer	D-441
Paul Summers*	Geologist	D-471
Carol Wilson	Geologist	D-443
W. F. De St. Jeor	Chief, Onshore	
	Minerals Team	D-228

*primarily involved with groundwater hydrology program

The following individuals are classified in the 1300 Series and are performing mineral-related functions:

Wilbur Palmquist	Hydrologist	D-471
Byron Shark	Physical Scientist	D-490
Bruce Van Haveren	Hydrologist	D-471

Time constraints did not allow for an in-depth analysis of minerals expertise at the SC. There are likely several individuals who, through education or work experience, have minerals capability but are not classified as such.

A search of the SC personnel roster turned up the following mineral positions permanently assigned to the SC:

Don Fisher	Mining Engineer	D-445
Paul Summerville	Geologist	D-471
Carol Wilson	Geologist	D-443
W. F. De St. Jean	Chief, Bureau	
Minerals Team		D-526

personnel involved with groundwater hydrology program

The following individuals are classified in the 1300 Series and are performing mineral-related functions:

William Peltz	Hydrologist	D-471
John Smith	Physical Scientist	D-460
Steve Van Houten	Hydrologist	D-471

These constraints did not allow for an in-depth analysis of mineral expertise at the SC. There are likely several individuals who, through education or work experience, have mineral capability but are not classified as such.

III. Service Center Support of Bureau Minerals Activities

State office and district office geologists were interviewed to obtain the following information.

A. Existing Automated Data Bases

There are numerous data bases for geology, energy, and mineral resources (GEM). Some field offices may not know of the existence of the data bases, or if they do, they do not know how to tap into or how to obtain these data bases, or may not have the software and/or hardware capability to manipulate such data bases. Most of our field offices do not have the expertise for reformatting, creating interpretive routines, statistical manipulations, etc.

B. Centralized GEM Functions

The Bureau has several functions to perform in its GEM resources program. The specialization required by certain functions and the work in each field office is such that it would be prohibitive (inefficient) to have these functions done by field offices.

III. Service Center Support of Bureau Minerals Activities

State office and district office geologists were interviewed to obtain the following information.

A. Existing Information Data Bases

There are numerous data bases for geology, energy, and mineral resources (GEM). Some field offices may not know of the existence of the data bases, or if they do, they do not know how to tap into or how to obtain these data bases, or may not have the software and/or hardware capability to manipulate such data bases. Most of our field offices do not have the expertise for reformatting, creating interactive formats, statistical manipulations, etc.

B. Anticipated GEM Functions

The Bureau has several functions to perform in its GEM resources program. The specification required by certain functions and the work in each field office is such that it would be prohibitive (impractical) to have these functions done by field offices.

IV. AVAILABLE AUTOMATED MINERAL SUPPORT SYSTEMS

Automated systems that currently support mineral activities in the Bureau are briefly described below. Table 1 summarizes current field office use. The results were achieved through interviews with minerals people at the state offices and through various individuals at the Denver Service Center with knowledge of ADP systems.

Automated Coal Lease Data System (ACLDS)

ACLDS is the Department's coal lease data management system. Geographic, geologic, economic, institutional and legal data are maintained and updated bi-annually. With the exception of proprietary data, data are available for use to facilitate management in policy decisions. The system supports compliance checking.

Automated Federal and Indian Lease Management System (AFILMS)

AFILMS is used to track and monitor operations on all leases, licenses, permits, applications and contracts for solid minerals on public, acquired and Indian lands. The system also tracks the Logical Mining Units for diligent development, and logs inspections of Solid Leaseable Mineral leases.

Automated Land and Minerals Record System (ALMRS)

The ALMR system, Phase I, is designed to replace the manual system of typed serial register, master title and use authorization plans and historical indexes. The automated data include legal land description, proprietor records, action codes and dates. It will also provide serial register pages, location index, proprietor index, and serial index and case aging and case leasing reports.

Communitization Agreement (CA)

The CA system is used to track and cross-reference data associated with Communitization Agreements (agreements for separate Federal and non-Federal tracts that cannot be independently developed in conformity with an established well-spacing program). Information stored in the data base includes type of CA; operator; legal description; effective approval, termination and first production dates; area of the CA; and lease tract data (number, legal description and area).

Computerized Onshore Monthly Engineering Report (COMER)

COMER contains data required to administer oil and gas operations on Federal and Indian onshore oil and gas leases. It includes information on Unit Agreements, Communitization Agreements, lease activities, well activities, field operations, applications for a permit to conduct operations and environmental analysis activities. It is used to measure and project onshore lease management program accomplishments for budgetary and management needs.

Computerized Onshore Record of Events (CORE)

The CORE system is used to track numbers, types, causes and effects of undesirable events occurring on onshore oil and gas lands under BLM supervision.

IV. ANALYSIS OF AUTOMATED BUSINESS SYSTEMS

Automated systems that currently support various activities in the business are briefly described below. Table I summarizes certain data related to the systems. These data are obtained through interviews with various people at the system offices and through various information at the various system offices with knowledge of the systems.

Automated Cash Sales Data System (ACSDS)

ACSDS is the largest system's cash sales data management system. It handles, economically, transactional and legal data are maintained and related information. With the exception of purchase order data, data are available for use in facilitating management in policy decisions. The system supports continuous checking.

Automated Financial and Labor Management System (AFMLS)

AFMLS is used to track and monitor operations on all business functions, providing information and comments for which managers on policy, strategy and labor costs. The system also tracks the labor force within the organization, and labor operations on both business and non-business functions.

Business Plan and Financial Control System (BPCS)

The BPCS system, which is designed to replace the manual system of financial control, is used to track and monitor operations on all business functions. It handles, economically, transactional and legal data are maintained and related information. With the exception of purchase order data, data are available for use in facilitating management in policy decisions. The system supports continuous checking.

Customer Service System (CSS)

The CSS system is used to track and monitor operations on all business functions, providing information and comments for which managers on policy, strategy and labor costs. The system also tracks the labor force within the organization, and labor operations on both business and non-business functions.

Inventory Management System (IMS)

IMS handles data related to inventory and has a system for inventory control. It handles, economically, transactional and legal data are maintained and related information. With the exception of purchase order data, data are available for use in facilitating management in policy decisions. The system supports continuous checking.

Manufacturing System (MS)

The MS system is used to track and monitor operations on all business functions, providing information and comments for which managers on policy, strategy and labor costs. The system also tracks the labor force within the organization, and labor operations on both business and non-business functions.

Dwight's Energy Data Base System (Dwight's DB)

DWIGHT's is a commercial data base that contains production data and related information on both active and inactive gas wells and oil leases in twenty states and Federal offshore. Data is available as hardcopy publications, microfiche, magnetic tapes and on-line computer data retrievals. Data is derived from state and Federal regulatory commission documents.

Eastern States Minerals (ESM)

The ESM system maintains data on minerals under the jurisdiction of the Eastern States Office, including total acreage by county and state. It produces management reports for the various Eastern States field offices.

Eastern States Office Patent Index (ESOPI)

The ESOPI system maintains descriptive information on land patents administered by the Eastern States Office. As original patents are committed to microfilm, descriptive information (e.g., name, patent number, legal description, microfilm roll number, image number, etc.) for each of the patents is collected and maintained by this data system. Periodically, the data is processed to produce various hardcopy reference indices for use by ESO records personnel in locating the microfilm version of land patent records.

GARNET

GARNET is a USGS graphics package that is part of the more comprehensive system called NCRDS (National Coal Resource Data System). This graphics program is user-friendly and interactive. It generates coal isopach maps, structure maps, interburden maps and isopleth maps. It also calculates coal images within a boundary and creates plot files for plotting maps true-to-scale on a plotter.

Geothermal Resources (GEOTHERM)

GEOTHERM is a USGS data base containing geothermal resources information. There are three files covering fields, wells and point sources of warm water in the United States and some other countries. Information on locality, geology and physical and chemical characteristics of the waters is stored in the system.

Hotline Data Base (Hotline DB)

HOTLINE is an oil and gas data base available through General Electric Information Services Co. It includes the MUNGER data base (CA, OR, WA, NV, AK) and the Rocky Mountain Region data base (ND, SD, MT, ID, UT, WY, CO, NE, NV, NM and AZ). It provides information on both active and historical wells. Data is available as hardcopy publications, microfiche, magnetic tapes and on-line computer data retrieval.

Geological Survey Data (Section 101)

Geological Survey Data (Section 101) is a comprehensive data base that contains geological data and related information on both active and inactive faults and all known or suspected seismicity. It is available as a public domain data base and is available to the public through the National Earthquake Information Center (NEIC).

Geological Survey Data (Section 102)

Geological Survey Data (Section 102) is a comprehensive data base that contains geological data and related information on both active and inactive faults and all known or suspected seismicity. It is available as a public domain data base and is available to the public through the National Earthquake Information Center (NEIC).

Geological Survey Data (Section 103)

Geological Survey Data (Section 103) is a comprehensive data base that contains geological data and related information on both active and inactive faults and all known or suspected seismicity. It is available as a public domain data base and is available to the public through the National Earthquake Information Center (NEIC).

Geological Survey Data (Section 104)

Geological Survey Data (Section 104) is a comprehensive data base that contains geological data and related information on both active and inactive faults and all known or suspected seismicity. It is available as a public domain data base and is available to the public through the National Earthquake Information Center (NEIC).

Geological Survey Data (Section 105)

Geological Survey Data (Section 105) is a comprehensive data base that contains geological data and related information on both active and inactive faults and all known or suspected seismicity. It is available as a public domain data base and is available to the public through the National Earthquake Information Center (NEIC).

Geological Survey Data (Section 106)

Geological Survey Data (Section 106) is a comprehensive data base that contains geological data and related information on both active and inactive faults and all known or suspected seismicity. It is available as a public domain data base and is available to the public through the National Earthquake Information Center (NEIC).

Known Geologic Structure Data Base (KGS DB)

The KGS data base was created by Eastern States Office to index the KGS's by legal description, state and county for easy information retrieval.

Lease Management (LM)

The LM system maintains data on oil, gas and mineral leases (excluding coal) on public lands and produces billings, receipts and a variety of management reports for various BLM offices.

Material Sales (MATS)

MATS processes and maintains data on timber, vegetal and mineral disposals (includes sales and free-use authorizations). Volumes, products, financial data and user identification are recorded to produce periodic monthly, quarterly and annual management reports for state offices and the Bureau's Washington Office. Statistical reports for inclusion in Congressional Reports are produced at the end of each fiscal year.

Mining Claims Recordation (MCR)

MCR provides timely information on mining claims located within the jurisdiction of the ten BLM administrative states. Cyclic reports include the Mining Claim Index.

Minerals Industrial Location System (MILS)

MILS is part of the Bureau of Mines' computerized Minerals Availability System (MAS), a comprehensive data base of known mineral deposits throughout the world. MILS, the location subsystem of MAS, is used for land use planning and land management. Computer-drawn map overlays showing the density (clusters) of mineral occurrences as well as computer printouts are available for inspection and reproduction at various Bureau of Mines Field Operation Centers.

Mining Analysis (MINA)

MINA is an interactive program that calculates the present worth for a given surface mining project that utilizes truck-shovel, dragline or combination mining techniques. There are four analysis options that depend upon the amount and quality of the input data. A Monte Carlo technique is used in cases where a range of reserve values are entered. The program was developed by the BLM Economic Evaluation Unit in New Mexico.

Mines Simulator (MINSIM)

MINSIM is a Bureau of Mines mine simulation model used for economic evaluation of mineral deposits. It is used to perform discounted cash flow rate of return, price determination, net present value analysis and Monte Carlo simulations. This simulation is used by the Phoenix Training Center's Mine and Beneficiation Cost Estimating Course (3000-11).

General Information (1955-56)

The RMA was established by Executive Order 11615 in 1955. Its legal jurisdiction, scope and authority are set forth in the RMA's charter.

General Information (1957)

The RMA's primary responsibility is to provide technical assistance to the states and territories in the field of water resources planning, development and management. It also provides technical assistance to the states and territories in the field of water resources planning, development and management.

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Mapping and Overlay Statistical System (MOSS)

MOSS is a spatial data analysis program and is used to assist in the analysis and management of digitally stored geographic information. MOSS can generate overlay maps in order to compare several variables. At the present time, MOSS is being evaluated for use in generating maps for use in coal tract delineation and KGS determinations.

Mineral Resources Data System (MRDS; formerly CRIB)

MRDS is a USGS data base that consists of descriptive data and historical data on the known mineral deposits and mineral commodities of the United States, and, to a certain extent, the world. A given record may relate to a single commodity, a group of commodities, a mineral deposit or a group of related deposits, such as a mining district.

Mineral System 1 (MS-1)

A data collection, storage and retrieval system which is designed to process lease inspection, well, facility and Incidence of Non-Compliance data for onshore fluid leaseable minerals. The system maintains a lease and well inventory.

Montana Resource Evaluation/Wyoming Resource Evaluation (MTRE/WRE)

MTRE and WRE are discounted cash flow programs used by the Economic Evaluation Units in Montana and Wyoming for determining the value of a coal tract in cents/ton and thus determining the amount of the front-end bonus.

New Mexico Reserve (NMRESERV)

NMRESERV is a series of mineral economic simulations for both surface and underground mines. It determines equipment, manpower, material, supplies and costs for a coal mining cost model and then sets up a cash flow table. This program was developed by Energy Power Research Institute (EPRI); and as it has been released to the public, it can be used for PRLA's where the work has to be reproducible by the public.

Oil Shale Leasing System (OSL)

This system is used to perform economic evaluations for oil shale leases. Geologic and mineral data, estimated capital and operating costs, and future oil prices are used to estimate economic rent for oil shale mining ventures.

Petroleum Information (PI)

PI drilling analysis data base contains information on wells that have been drilled in the US from 1970 to the present. The data are available as hardcopy publications, microfiche, magnetic tapes and on-line computer data retrieval. BLM users may use USGS's subscription to PI and obtain the information at minimal costs.

Present Worth 1 (PW-1)

PW-1 is a discounted cash flow program that calculates present worth of a given set of oil and/or gas wells. Estimates are derived from geological parameters that are given as input to the program. The program assumes a 5% probability of success rather than weighting the estimates statistically but has been accepted as a reliable method by the IBLA (Interior Board of Land Appeals). This program was developed by the BLM Economic Evaluation Unit in New Mexico and is used throughout the Bureau.

Simultaneous Oil and Gas Lease System (SIMO)

SIMO is used to process Simultaneous Oil and Gas Lease Applications. The system provides drawing results, refunding and other administrative reports in support of the simultaneous oil and gas drawings held bi-monthly.

Unitization Agreement (UA)

The UA system is used to track and cross-reference data associated with Unitization Agreements (agreements for unitized development and operation of adjacent oil and gas leases so that drilling and production can proceed in an efficient and cost effective manner).

Table 1 summarizes the above systems, identifies the host computer, and shows states' use of the systems.

With the development of the program that indicated present work of a given set of all studies was being. This indicates the history from geological perspective that was given as input to the program. The program has been a 30 percent of success ratio than indicated the statistical reliability but has been accepted as a reliable method by the USA (United States) as well as others. This program was developed by the USA National Institute of Health and has been used in many other countries.

Statistical Analysis of the Data (1954)

This is used to analyze the data and the data is analyzed with statistical methods. The data is analyzed with statistical methods and the data is analyzed with statistical methods. The data is analyzed with statistical methods and the data is analyzed with statistical methods.

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Table 1

Available Automated Mineral Support Systems

SYSTEM	HOST COMPUTER	AZ	AK	CA	CO	ES	CURRENT BLM USE 1				OR	UT	WY
							ID	MT	NV	NM			
ACLDS/AFILMS	MULTICS	X	X	X	X	X	X	X	X	X	X	X	X
ALMRS	DPS-8		X	X	X	X	X	X	X	X	X	X	X
CA	MULTICS												
COMER	AMDAHL												
CORE	AMDAHL			X									
DWIGHT'S DB	2	X		X	X	X		X		X		X	X
ESM	DPS-8					X							
ESOP	DPS-8					X							
GARNET	MULTICS				X							X	X
GEO THERMAL	AMDAHL			X							X		
HOTLINE DB	2												X
KGS DB	MULTICS					X							
LM	DPS-8	X	X	X	X	X	X	X	X	X	X	X	X
MATS	DPS-8	X	X	X	X	X	X	X	X	X	X	X	X
MCR	DPS-8		X	X	X	X	X	X	X	X	X	X	X
MILS	MULTICS									X			
MINA	MULTICS									X			
MINSIM	BUREAU OF MINES		X										
MOSS	DATA GENERAL	X			X					X			X
MRDS (CRIB)	AMDAHL						X			X			
MS-1	MULTICS	X		X	X	X		X	X	X		X	X
MTRE/WRE	MULTICS							X					
NMRESERV										X			
OSL	MULTICS				X								
PI	2	X		X		X		X		3		X	X

Table 1

Available Automated Mineral Support Systems

SYSTEM	HOST	CURRENT BLM USE 1											
	COMPUTER	AK	AZ	CA	CO	ES	ID	MT	NV	NM	OR	UT	WY
PW-1	MULTICS							X		X			
SIMO	DPS-8	X	X	X	X	X	X	X	X	X	X	X	X
UA	MULTICS												

Several SC and field office-based persons were interviewed on GIS and Remote Sensing Applications in minerals programs. Furthermore, several conceptual papers, academic reports, BLM Users Manual, and similar written materials were examined.

A. Geographic Information Systems

It is clear that technological and organizational changes in computer graphics are occurring very rapidly.

The SC Super MAP package has nineteen (19) separate GIS-related

1. Use occurs at state office and/or district office/resource area.
2. Commercial information service. (evaluations).
3. Use has been projected when USGS/BLM agreement is finalized.

A Bureauwide Computer Graphics User Committee met at the SC during the 14-16 May 1984 period. Several priority issues at this meeting were related to minerals program needs and applications.

V. Minerals Functions and Advanced Computer Technologies

The Study Group examined two prominent technology sets relative to minerals activities: Geographic Information Systems and Remote Sensing (automated techniques).

Several SC and field office-based persons were interviewed on GIS and Remote Sensing applications in minerals programs. Furthermore, several conceptual papers, academic reports, MOSS Users Manual, and similar written materials were examined.

A. Geographic Information Systems

It is clear that technological and organizational changes in computer graphics are occurring very rapidly.

- The SC Super RDPP package has nineteen (19) separate GIS-related components and three (3) of these focus on minerals applications (GEM, Oil and Gas, and Coal Evaluations).

- A Bureauwide Computer Graphics User Committee met at the SC during the 14-16 May 1984 period. Several priority issues at this meeting were related to minerals program needs and applications.

V. Minerals Function and Advanced Computer Technologies

The Study Group examined the prominent technology gaps relative to minerals activities: Geographic Information Systems and Remote Sensing (automated technology).

Several SC and field office-based persons were interviewed on GIS and Remote Sensing applications in minerals programs. Furthermore, several conceptual papers, academic reports, MMSI Users Manual, and similar written materials were obtained.

A. Geographic Information Systems

It is clear that technological and organizational changes in computer graphics are occurring very rapidly.

- The SC Survey RFP package has nineteen (19) separate GIS-related components and those (7) of those focus on minerals applications (DEM, DTI, and CAC, and Coal Evaluations).

- A Subcommittee Computer Graphics User Committee met at the SC during the 14-16 May 1982 period. Several priority issues at this meeting were related to minerals program needs and applications.

- Hardware requirements now limit MOSS (the Bureau's main GIS approach) usage to only a select few BLM state organizations.
- Responsibilities for GIS work in field offices fall into a variety of divisions (operations, information systems, remote sensing, planning, resources, cartography, . . .), each of which has a stake in the program.
- Centralization of GIS work in the SC is being accomplished with the creation and staffing of D-441 (Graphic Systems Development) and D-443 (Technology Application Assistance)..

B. Remote Sensing Techniques

There are numerous remote sensing techniques that can provide critical data relating to geology, energy and mineral (GEM) resources. Some of the techniques include the following: automated analysis of airborne and satellite digital data, automated analysis of radar and airborne radiometric data, and visual analysis of various levels of aerial photography and satellite imagery.

The Bureau has yet to clearly define which GEM functions are most able to benefit from a particular remote sensing technique. Clear identification of needs, sources of needs, and remote sensing capabilities relative to these needs is required. Certain remote sensing techniques require considerable

Hardware requirements are listed below (the Bureau's own GIS systems) -
range to only a select few GIS systems.

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divisions (operations, information systems, remote sensing, planning,
resources, cartography, ...), each of which has a stake in the GIS
work.

Centralization of GIS work in the DC is being accomplished with the
creation and staffing of D-401 (Graphic System Development) and
D-402 (Technology Support Assistance).

2. Remote Sensing Techniques

There are numerous remote sensing techniques that can provide critical data
relating to geology, energy and mineral (E&M) resources. Some of the tech-
niques include the following: satellite analysis of structure and vegetation
digital data, satellite analysis of water and structure (hydrologic data, and
visual analysis of various levels of aerial photography and satellite imagery.

The Bureau has yet to clearly define which GIS functions are most vital to
benefit from a particular remote sensing technique. Close identification of
needs, sources of needs, and remote sensing capabilities relative to these
needs is required. Certain remote sensing techniques require considerable

expertise, computer hardware and software that can be efficient only if housed at a centralized facility such as DSC (at least in the near term under current budget/manpower restrictions).

2. The Service Center has very few positions devoted full time to mineral-related activities. The SC is deficient in most skill areas within the minerals discipline and there is a lack of field-experienced minerals personnel.
3. There is a need to catalog all available outposted minerals data bases, including a description of data base characteristics and procedures for accessing each data base through field office computer terminals.
4. Certain existing minerals data bases must be made more widely available to field offices. There is a need to consolidate several data bases to avoid duplication.
5. Several mineral functions, including validity examinations, assessment, appraisal, resource evaluation, and fair market value determinations, could be centralized at a single location.
6. The SC does not currently provide "special skills" assistance to field offices for G&M resources, as it does for other resource activities.

expensive, computer hardware and software that can be efficient only if housed
at a centralized facility such as DEC (at least in the near term under current
budgetary/revenue restrictions).

Conclusions

1. Service Center mineral-supported activities are fragmented and independent, but lack of centralization is not deemed a problem. There is adequate funding to carry out our current responsibilities.
2. The Service Center has very few positions devoted full time to mineral-related activities. The SC is deficient in most skill areas within the minerals discipline and there is a lack of field-experienced minerals personnel.
3. There is a need to catalog all available automated minerals data bases, including a description of data base characteristics and procedures for accessing each data base through field office computer terminals.
4. Certain existing minerals data bases must be made more easily available to field offices. There is a need to consolidate several data bases to avoid duplication.
5. Several mineral functions, including validity examinations, assessment, appraisal, resource evaluation, and fair market value determinations, could be centralized at a single location.
6. The SC does not currently provide "special skills" assistance to field offices for GEM resources, as it does for other resource activities.

Conclusions

1. Service Center mineral-supported activities are fragmented and independent, but lack of centralization is not deemed a problem. There is adequate funding to carry out our current responsibilities.
2. The Service Center has very few positions devoted full time to mineral-related activities. The SC is deficient in most skill areas within the minerals discipline and there is a lack of field-experienced mineral personnel.
3. There is a need to develop (1) available automated mineral data bases, including a description of data base characteristics and procedures for accessing each data base through field office computer terminals.
4. Certain existing mineral data bases must be made more easily available to field offices. There is a need to consolidate several data bases to avoid duplication.
5. Several mineral functions, including validity assessment, assessment, appraisal, resource evaluation, and fair market value determination, could be centralized at a single location.
6. The SC does not currently provide "special skills" assistance to field offices for EIT resources, as it does for other resource activities.

7. The Study Group found that certain mineral related activities were in need of review for potential GIS application:

- Pre-lease technical investigations performed to provide land manager with information needed to make leasing decisions. In the coal program, this refers especially to hydrology investigations and unsuitability determinations.
- Surface protection responsibilities. This entire program is in need of review to determine information requirements and training needs.
- Hazardous wastes management. Our agency responsibilities and, in fact, the issues have not yet been clarified. Identification of illegal dump sites could be addressed using remote sensing. Selection of potential sites for hazardous material disposal might be a viable GIS application.

8. The SC should evaluate the feasibility of the Bureau having and/or using a scan digitizer to support field offices. Geologic maps are usually very complex and consequently difficult and time-consuming to digitize.

7. The study group found that certain mineral related activities were in need of review for national GIS application.

Pre-lease technical investigations performed to provide land manager with information needed to make leasing decisions. In the cost program, this review especially in hydrology investigations and availability determinations.

Surface production responsibilities. This review program is in need of review to determine information requirements and training needs.

Hydrology water management. Our agency responsibilities and, in fact, the issues have not been clarified. Identification of illegal water rights could be addressed using remote sensing. Selection of potential areas for hydrologic material disposal might be a viable GIS application.

8. The SC should evaluate the feasibility of the Bureau having and/or using a lease digitizer to support field offices. Geologic maps are usually very complex and consequently difficult and time-consuming to digitize.

9. Field offices would benefit if the SC would provide the following remote sensing assistance:

- Identify clearly which BLM GEM resources functions can benefit from either state-of-the-art remote sensing methods or developing techniques. Establish expertise at DSC (i.e., geologist with expertise in remote sensing techniques) to identify and apply the required techniques Bureauwide. For analysis of the automated remotely sensed data (LANDSAT or aircraft Multi-spectered Scanner or Thematic Mapper), SC remote sensing capabilities would be required, at least until the necessary hardware and expertise becomes more widely disseminated.
- The multivariable analysis and synthesis techniques developed by DSC for Worland and Winnemucca to assist in GEM assessment must be finalized and rigorously evaluated by BLM minerals personnel at all levels. The required DSC expertise described above is essential for this evaluation. These and similar techniques, still untested Bureauwide, may produce significant benefits for analysis of GEM resources.

3. Field offices would benefit if the SC would provide the following remote sensing assistance:

- Identify clearly which BIM GIS resources functions can benefit from either state-of-the-art remote sensing methods or developing techniques. Establish expertise at DDC (i.e., geologists with expertise in remote sensing techniques) to identify and apply the required techniques. Furthermore, for analysis of the automated remotely sensed data (LANDSAT or advanced multi-spectral scanner or Thematic Mapper), SC remote sensing capabilities would be required, at least until the necessary hardware and expertise become more widely disseminated.

- The multispectral analysis and synthesis techniques developed by DDC for World and Biosphere to assist in BIM assessment must be finalized and rigorously evaluated by BIM scientific personnel at all levels. The required DDC expertise described above is essential for this evaluation. Once and similar techniques, still under development, may produce significant benefits for analysis of BIM resources.

Director's Office (D-100)

Administrative Support: telephone, mailing, reimbursable work, xerox expenses

Mineral Funding for D-100 in FY 84

coal (4112)	349,000
geothermal (4113)	500
oil shale (4114)	1,000
mineral leasing (4133)	500
Total:	351,000

Division of Technology Transfer (D-140)

1. Development of geo-reference handbook.
2. Print technical bulletin on guide to airborne and geophysical systems for Washington Office.
3. Develop video program on mine land rehabilitation.
4. Improve and enhance slide presentation on mining law.

APPENDIX

Mineral Funding for D-140 for FY 84

oil and gas (4111)	23,200
coal (4112)	1,400
mining law (4132)	1,000
mineral leasing (4133)	1,000
Total:	26,600

Current Minerals-Funded Activities at the Service Center

APPENDIX

Current Minerals-Related Activities of the Service Center

Director's Office (D-100)

Administrative Support: telephone, moving, reimbursible work, xerox expenses

Mineral Funding for D-100 in FY 84

coal (4112)	\$49,000
geothermal (4113)	600
oil shale (4114)	1,000
mineral leasing (4133)	800
Total:	<u>\$51,400</u>

Mineral Funding for D-220 for FY 84

Division of Technology Transfer (D-140)

1. Development of geo-reference handbook.
2. Print technical bulletin on guide to airborne and geophysical systems for Washington Office.
3. Develop video program on mine land rehabilitation.
4. Improve and enhance slide presentation on mining law.

Mineral Funding for D-140 for FY 84

oil and gas (4111)	\$ 3,200
coal (4112)	7,350
mining law (4132)	6,400
mineral leasing (4133)	1,000
Total:	<u>\$17,950</u>

Mineral Funding for D-240 for FY 84

oil and gas (4111)	\$ 15,900
mining law (4132)	702,250
Total:	<u>\$718,150</u>

Director's Office (D-100)

Administrative support: telephone, mailing, reproducible work, travel expenses

Mineral Funding for D-100 for FY 84

coal (4112)	\$46,000
geothermal (4113)	000
oil shale (4114)	1,000
mineral leasing (4115)	000
Total:	\$47,000

Division of Technology Transfer (D-140)

1. Development of geo-referenced handbook.
2. Print technical bulletin on guide to minerals and geophysical systems for Washington State.
3. Developing video program on mine land rehabilitation.
4. In-house and external slide presentation on mining law.

Mineral Funding for D-140 for FY 84

oil and gas (4111)	\$ 7,500
coal (4112)	7,500
mining law (4115)	000
mineral leasing (4113)	1,000
Total:	\$16,000

Division of Computer Applications (D-220)
Energy and Minerals Team (D-225)

1. Maintain and update the Automated Coal Lease Data System (ACLDS) for the Bureau and Department's Coal Data Management System.
2. Maintain data on Eastern States minerals and produce management reports.
3. Maintain information program of simultaneous oil and gas application data for various state offices.
4. Maintain mining claim recordation system.

Mineral Funding for D-220 for FY 84

oil and gas (4111)	\$63,200
coal (4112)	10,600
mining law (4132)	18,550
Total:	\$92,350

Division of Record Systems (D-240)

Branch of Status Records Systems (D-244) - User representative for mining claim recordation system; provide training for interpreting MTP mineral status.

Branch of Library/Records Management (D-245) - Provide training on leaseable mineral proprietary data development of handbook on how to handle proprietary data; acquire mineral literature to support field professional needs.

Branch of Micrographics (D-246) - Provide micrographics of mining claim indices, mineral patent surveys, simultaneous oil and gas records, and miscellaneous onshore leaseable mineral records.

Mineral Funding for D-240 for FY 84

oil and gas (4111)	\$ 15,900
mining law (4132)	102,250
Total:	\$118,150

Division of Computer Applications (D-250)
Energy and Minerals Team (D-250)

1. Maintain and update the Automated Coal Lease Data System (ACLD) for the Bureau and Department's Coal Lease Management System.
2. Maintain data on Eastern States minerals and produce management reports.
3. Maintain information program of simultaneous oil and gas application data for various state offices.
4. Maintain mining claim recordation system.

Mineral Funding for D-250 for FY 84

oil and gas (411)	\$5,500
coal (412)	10,500
mining law (413)	10,500
Total:	\$26,500

Division of Record System (D-240)

Branch of Record System (D-240) - This representative for mining claim recordation system, providing for interpreting MTP mineral status.

Branch of Library/Records Management (D-241) - Provides training on records management, proprietary data development to maintain on how to handle proprietary data; acquire mineral literature to support field professional needs.

Branch of Micrographics (D-242) - Provides micrographics of mining claim indices, mineral patent records, and mineral oil and gas records, and miscellaneous resource records.

Mineral Funding for D-240 for FY 84

oil and gas (411)	\$12,800
mining law (412)	105,500
Total:	\$118,300

Assistant Director of Technology and Scientific Systems (D-400)

Administrative Support: reimbursible work

Mineral Funding for D-400 for FY 84

coal (4112)	\$ 4,100
oil and gas (4111)	2,900
oil shale (4114)	8,000
mining law (4132)	4,200
Total:	<u>\$19,200</u>

Division of Survey and Mapping Systems (D-410)

1. Produce 1:100,000 scale map series.
2. Development and use of photogrammetry to measure mine spoil piles, mine dumps, and disturbed areas for reclamation projects.

Mineral Funding for D-410 for FY 84

oil and gas (4111)	\$106,400
coal (4112)	53,150
geothermal (4113)	9,400
oil shale (4114)	7,500
mining law (4132)	24,100
mineral leasing (4133)	11,200
Total:	<u>\$211,700</u>

Administrative Support: restructure work

Mineral Funding for D-400 for FY 84

coal (4712)	\$ 4,100
oil and gas (4713)	2,500
oil shale (4714)	8,000
mining law (4715)	4,500
Total:	\$19,100

Division of Survey and Mapping Systems (D-410)

1. Produce 1:100,000 scale map series.
2. Development and use of photogrammetry to measure mine spoil piles, mine dumps, and disturbed areas for reclamation projects.

Mineral Funding for D-410 for FY 84

oil and gas (4713)	\$100,000
coal (4712)	20,100
geophysical (4713)	3,400
oil shale (4714)	7,000
mining law (4715)	20,100
mineral leasing (4716)	17,000
Total:	\$167,600

Division of Scientific Systems (D-440)

Branch of Scientific Systems Development (D-441)

1. Develop a user manual for DCF analysis in setting bonus bids for oil and gas offerings.
2. Provide input to task force writing MOU with coal branch of USGS.
3. Develop tracking system of land withdrawals in areas of critical mineral potential.
4. Develop BLM-wide procedures for determining KGS's for oil and gas.
5. Provide technical assistance in evaluating Petroleum Information Services for usage in State Office.
6. Develop mineral models for mineral resource evaluation.
7. Provide technical assistance to the multivariable analysis project.
8. Provide technical assistance to Jean Juilland's projects and programs.
9. Development of the multivariable analysis project for mineral resource evaluation.
10. Development of thematic mapper data for GEM evaluation.
11. Processing of gamma ray spectrometer and aeromagnetic NURE data for application to GEM assessment.

Branch of Scientific Systems Applications (D-442)

1. Develop system to detect unauthorized mining and drilling activity for ESO.
2. Provide general technical assistance in development and application of geographic data bases that relate to minerals for USO.
3. Create a data base for resource areawide planning and resource management decision making (including minerals) for Pinedale, Wyoming.
4. Establish resource data base for general planning as it relates to restrictions arising from mineral leasing for Farmington, New Mexico, resource area.
5. Develop data base to assist decision making in oil field rehabilitation for Washakie, Wyoming.

Division of Scientific Systems (D-440)

Branch of Scientific Systems Development (D-441)

1. Develop a user manual for DCF analysis in setting bond bids for oil and gas settings.
2. Provide input to task force working with coal branch of USGS.
3. Develop tracking system of land withdrawals in areas of critical mineral potential.
4. Develop life-cycle procedures for determining bid's for oil and gas.
5. Provide technical assistance in evaluating Petroleum Information System for usage in State Office.
6. Develop mineral assets for mineral resource evaluation.
7. Provide technical assistance to the multi-state analysis project.
8. Provide technical assistance to Jean Dillard's projects and programs.
9. Development of the multi-state analysis project for mineral resource evaluation.
10. Development of thematic map data for DCM evaluation.
11. Processing of gamma ray spectrometer and geophysical well data for application to DCM assessment.

Branch of Scientific Systems Applications (D-442)

1. Develop system to detect unauthorized mining and drilling activity for USGS.
2. Provide general technical assistance in development and application of geographic data bases that relate to minerals for USGS.
3. Create a data base for resource inventory planning and resource management decision making (including minerals) for Nevada, Wyoming.
4. Establish resource data base for general planning as it relates to restrictions arising from mineral leasing for Washington, New Mexico, resource areas.
5. Develop data base to assist decision making in oil field reclassification for Nevada, Wyoming.

6. Enhancement of Landsat imagery for interpretation by resource area geologists of lineaments, areas of hydrothermal alteration, and other geologic features. Data to be digitally merged with other data into a stratified minerals information base for identifying areas of high mineral potential. For Rio Puerco resource area.

2. Mineral Funding for D-440 for FY 84

oil and gas (4111)	\$ 7,200
coal (4112)	131,500
geothermal (4113)	38,000
mining law (4132)	5,500
Total:	\$182,200

6. Technical assistance to the Washington Office in developing handbook on surface protection.

7. Provide user representative for editing of mineral material data for the mineral material data system.

8. Technical assistance to field offices including hazardous waste disposal.

9. Provide user representative for editing information on mining claims on wilderness study areas.

10. Develop training program for hazardous waste disposal.

11. Present training course on groundwater evaluation techniques.

Mineral Funding for D-470 for FY 84

coal (4112)	\$1,835,500
oil shale (4114)	1,300
Total:	\$1,837,800

Division of EIS Services (D-490)

Produce EIS's in oil shale related areas.

Mineral Funding for D-490 for FY 84

oil shale (4114)	\$467,000
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2. Enhancement of Land Use Maps for Interpretation by Resource Users
 Geographic Information Systems (GIS) are being developed to enhance the
 interpretation of land use maps. These systems will be used to create
 digital maps of land use and cover. The maps will be used to
 identify areas of high priority for resource management. The maps
 will also be used to identify areas of high priority for resource
 management. The maps will be used to identify areas of high priority
 for resource management.

Financial Summary for FY 2000

Operating Expenses	\$ 1,100
Capital Expenses	12,500
Grants	25,000
Interest	2,000
Total	\$40,600

Division of Resource Systems (D-470)
Branch of Physical Resources (D-471)

1. Monitor contract with Water Resource Division, USGS for water quality and quantity on federal coal lands.
2. Development of mine land rehabilitation work under the EMIRA program.
3. Development of a computer model for groundwater impacted by mining.
4. Develop precipitation runoff model for coal lands.
5. Participate in oil shale hydrology study involving Wyoming, Utah and Colorado.
6. Technical assistance to the Washington Office in developing handbook on surface protection.
7. Provide user representative for editing of mineral material data for the mineral material data system.
8. Technical assistance to field offices including hazardous waste disposal.
9. Provide user representative for editing information on mining claims on wilderness study areas.
10. Develop training program for hazardous waste disposal.
11. Present training course on groundwater evaluation techniques.

Mineral Funding for D-470 for FY 84

coal (4112)	\$1,833,500
oil shale (4114)	3,900
Total:	<u>\$1,837,400</u>

Division of EIS Services (D-490)

Produce EIS's in oil shale related areas.

Mineral Funding for D-490 for FY 84

oil shale (4114)	\$467,600
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Listed on the enclosed pages is a summary by Division of current 4100 activities that are being funded in FY 84.

An overall summary of mineral funding at DSC is as follows:

oil and gas (4111)	\$ 200,000	(6.67%)	D-140, 220, 240, 400, 410, 440
coal (4112)	2,088,000	(69.65%)	D-100, 140, 220, 400, 410, 440, 470
geothermal (4113)	48,000	(1.60%)	D-100, 410, 440
oil shale (4114)	488,000	(16.28%)	D-100, 400, 410, 470, 490
mining law (4132)	161,000	(5.37%)	D-140, 220, 240, 400, 410, 440
mineral leasing (4133)	13,000	(0.43%)	D-410
Total:	<u>\$2,998,000</u>		

Listed on the enclosed page is a summary of Division of current 4190 activities that are being funded in FY 82.

An overall summary of minority funding at DDC is as follows:

oil and gas (4111)	2,500,000 (4,574) 5-740	230,000, 430, 430, 430
coal (4112)	2,000,000 (4,574) 5-740	190,000, 230, 400, 430, 430
geothermal (4113)	40,000 (1,000) 5-740	430, 430
oil shale (4114)	400,000 (1,000) 5-740	400, 430, 430, 430
mineral fuel (4115)	767,000 (4,574) 5-740	230, 240, 400, 430, 430
mineral leasing (4116)	13,000 (6,433) 5-740	
Total:	22,307,000	



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
DENVER SERVICE CENTER
DENVER FEDERAL CENTER, BUILDING 50
DENVER, COLORADO 80225

June 15, 1984

Memorandum

To: ASCD, Technical and Scientific Services

From: Bruce Van Haveren (D-471)

Subject: Transmittal of Draft Report on Service Center Role
in Support of BLM Minerals Programs

Enclosed please find subject report produced by the SC Minerals Study Group as promised.

As we agreed at the beginning of the study, the report contains only the Study Group's observations, findings, and conclusions. Formal recommendations are not included.

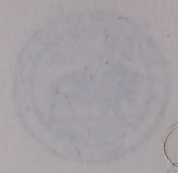
The Study Group will be available to reconvene and formulate specific recommendations for inclusion in a final report, if you so desire.

Bruce Van Haveren

Enclosure

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
LAND AND WATER RESOURCES
GENERAL INVESTIGATIVE DIVISION
WASHINGTON, D.C.



June 15, 1984

Memorandum

To: AGRI, Technology and Scientific Services

From: Bruce Van Housen (B-411)

Subject: Transmittal of Draft Report on Service Center Role
in Support of the National Program

Enclosed please find draft report prepared by the SC National Study
Group on Service Centers.

As we agreed at the beginning of the study, the report contains only
the Study Group's observations, findings, and conclusions. Formal
recommendations are not included.

The Study Group will be available to respond to questions and formulate specific
recommendations for inclusion in a final report, if you so desire.

Bruce Van Housen

Enclosure

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